

REMARKS

The above amendments to the above-captioned application along with the following remarks are being submitted as a full and complete response to the Official Action dated September 21, 2005. In view of the above amendments and the following remarks, the Examiner is respectfully requested to give due consideration to this application, to indicate the allowability of the claims, and to pass this case to issue.

Status of the Claims

Claims 1-4 are under consideration in this application. New claims 3-4 are being added to recited other embodiments described in the specification, specifically in the second and last paragraphs on page 3 of the specification. All the amendments to the claims are supported by the specification. Applicant hereby submits that no new matter is being introduced into the application through the submission of this response.

Prior Art Rejections

Claims 1 - 2 were rejected under 35 U.S.C. §103(a) as being unpatentable over US Patent No. 6,730,421 to Kirino et al. (hereinafter "Kirino") in view of US Patent No. 6,841,259 to Takahashi et al. (hereinafter "Takahashi"). These rejections have been carefully considered, but are most respectfully traversed.

The manufacturing process of a perpendicular magnetic recording medium of the invention (for example, the embodiment depicted in Figs. 1-2), as recited in claim 1, comprising the steps of: forming a disordered antiferromagnetic layer 22 on a substrate 11; forming a polycrystalline soft magnetic layer 23 on the antiferromagnetic layer 22; and forming an amorphous soft magnetic layer 13 on the polycrystalline soft magnetic layer 23. In other words, the invention results in a structure of "amorphous soft magnetic layer/ polycrystalline soft magnetic layer/ disordered antiferromagnetic layer/ substrate". Every steps are carried out while applying a magnetic field having a component parallel to a surface of the substrate.

The invention provides a perpendicular magnetic recording medium having a recording density of 50 Gbits or more per square inch and a high medium S/N, which suppresses spike noises from the soft magnetic underlayer by a magnetic domain control layer. The domain control layer includes at least a first polycrystalline soft magnetic layer,

and a disordered antiferromagnetic layer, to control the domain of the soft magnetic underlayer and reduce medium noises (p. 2 , last 2 paragraphs).The disordered antiferromagnetic layer may be a disordered alloy mainly composed of Mn and Ir, or mainly composed of Cr, Mn, and Pt. When the domain control layer is formed using such a material while applying a magnetic field having a component of a parallel direction to a surface of the substrate, a *unidirectional magnetic anisotropy* is induced in a direction of applying the magnetic field, which effectively suppresses the spike noises (p. 3, last paragraph) to provide high reliability and a low error rate (p. 17, last paragraph).

Contrary to the Examiner's assertion that Kirino forms a disordered antiferromagnetic layer on a substrate followed by two soft magnetic layers (p. 2, last paragraph of the outstanding Office Action), the relevant portions of Kirino merely described forming a general magnetic layer (col. 16, line 44) on an underlying layer with soft magnetization which is composed of crystal grains and formed on a substrate (col. 16, lines 43-44). Preferably, Kirino provides another soft magnetic layer (composed of an amorphous material) between the substrate and the underlying layer (col. 20, lines 26-28). In other words, Kirino provides a structure of "polycrystalline soft magnetic layer/ amorphous soft magnetic layer/ substrate." Kirino simply does not provide any "disordered antiferromagnetic" layer between the substrate and the soft magnetic layers. In addition, the order of Kirino's soft magnetic layers ("polycrystalline/ amorphous) is opposite to the one (amorphous/ polycrystalline) of the invention with respect to the substrate.

Takahashi was relied upon by the examiner to teach "carrying every step while applying a magnetic field having a component parallel to a surface of the substrate". However, Takahashi fails to compensate for Kirino's deficiencies as discussed above.

The cite prior art references and their combinations fail to teach or suggest each and every feature of the present invention as recited in independent claim 1. As such, the present invention as now claimed is distinguishable and thereby allowable over the rejections raised in the Office Action. The withdrawal of the outstanding prior art rejections is in order, and is respectfully solicited.

Conclusion

In view of all the above, clear and distinct differences as discussed exist between the present invention as now claimed and the prior art reference upon which the rejections in the Office Action rely, Applicants respectfully contend that the prior art references cannot

anticipate the present invention or render the present invention obvious. Rather, the present invention as a whole is distinguishable, and thereby allowable over the prior art.

Favorable reconsideration of this application is respectfully solicited. Should there be any outstanding issues requiring discussion that would further the prosecution and allowance of the above-captioned application, the Examiner is invited to contact the Applicant's undersigned representative at the address and phone number indicated below.

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